

AMENDMENTS TO THE CLAIMS

Applicant respectfully requests the following amendments to the claim set:

1-3. (canceled).

4. (currently amended) An airfoil comprising:

a frontal surface that leads through a fluid;

an first surface relating with said frontal surface that receives fluid flow thereon;

a second surface opposite said first surface and relating with said frontal surface,

said second surface also receiving fluid thereon;

a airfoil tip relating to said first and second surfaces that releases fluid from said

airfoil; and

at least one fluid flow regulator featured and operable with said first surface, said
fluid flow regulator comprising a leading edge, a trailing edge, and a pressure recovery
drop extending between said leading and trailing edges to form a down step, said pressure
recovery drop comprising at least one drop face of a calculated height formed therein,
said fluid flow regulator functioning to optimize air flow, reduce separation of said fluid
over said first surface of said airfoil, and reduce induced noise, The airfoil of claim 1,
wherein said fluid flow regulator is removably attached to said first surface.

5-9. (canceled)

10. An airfoil comprising:

a frontal surface that leads through a fluid;

an first surface relating with said frontal surface that receives fluid flow thereon;
a second surface opposite said first surface and relating with said frontal surface,
said second surface also receiving fluid thereon;
a airfoil tip relating to said first and second surfaces that releases fluid from said
airfoil; and

at least one fluid flow regulator featured and operable with said first surface, said fluid flow
regulator comprising a leading edge, a trailing edge, and a pressure recovery drop extending
between said leading and trailing edges to form a down step, said pressure recovery drop
comprising at least one drop face of a calculated height formed therein, said fluid flow regulator
functioning to optimize air flow, reduce separation of said fluid over said first surface of said
airfoil, and reduce induced noise, The airfoil of claim 1, wherein said fluid flow regulator
comprises means for effectuating vector positioning about said airfoil.

11-17. (canceled)

18. (currently amended) A hydrofoil comprising:

a frontal surface that leads through a liquid;
an first surface relating with said frontal surface that receives liquid flow thereon;
a second surface opposite said first surface and relating with said frontal surface,
said second surface also receiving said liquid thereon;
a hydrofoil tip relating to said first and second surfaces that releases said liquid
from said hydrofoil; and

at least one fluid flow regulator featured and operable with said first surface, said
fluid flow regulator comprising a leading edge, a trailing edge, and a pressure recovery
drop extending between said leading and trailing edges to form a down step, said pressure
recovery drop comprising at least one drop face of a calculated height formed therein,
said fluid flow regulator functioning to optimize liquid flow, reduce separation of said
liquid over said first surface of said hydrofoil, and reduce induced noise, The hydrofoil of
~~claim 15,~~ wherein said fluid flow regulator is removably attached to said first surface.

19- 47. (canceled).

48. (new) The airfoil of claim 4, further comprising at least one fluid flow regulator featured and operable with said second surface.

49. (new) The airfoil of claim 4, wherein said fluid flow regulator is integrally formed with said first surface.

50. (new) The airfoil of claim 4, wherein said first surface is comprised of more than one fluid flow regulator.

51. (new) The airfoil of claim 4, wherein said fluid flow regulator is positioned in an orientation selected from the group consisting of perpendicular to the direction of flow of said fluid, substantially perpendicular to the direction of flow of said fluid, on an angle with respect to

said direction of flow of said fluid, parallel or substantially parallel to the direction of flow of said fluid, and any combination of these.

52. (new) The airfoil of claim 4, wherein said fluid flow regulator comprises a formation selected from the group consisting of linear, curved, spline, and any combination of these.

53. (new) The airfoil of claim 4, wherein said fluid flow regulator is positioned at or proximate an optimal pressure recovery point at which point there is an imbalanced or unequal pressure gradient forward and aft of said fluid, thus creating an adverse pressure about said airfoil, which adverse pressure gradient induces friction and pressure drag that ultimately increases the separation potential of said fluid.

54. (new) The airfoil of claim 4, wherein said fluid flow regulator comprises a dynamic fluid flow regulator that functions to vary the height of said at least one drop face.

55. (new) The airfoil of claim 54, wherein said dynamic fluid flow regulator inconsistently varies the height of said drop face along the length of said pressure recovery drop.

56. (new) The airfoil of claim 4, wherein said fluid flow regulator comprises means for effectuating vector positioning about said airfoil.

57. (new) The airfoil of claim 4, wherein said pressure recovery drop comprises an orthogonal design.

58. (new) The airfoil of claim 4, wherein said first and second surfaces comprise a plurality of said fluid flow regulators.

59. (new) The airfoil of claim 4, wherein said airfoil is selected from the group consisting of a fan blade, a rotor, a turbine blade, a blower blade, an impeller, a propeller, and any other similar airfoils.

60. (new) The airfoil of claim 4, further comprising a sub-atmospheric barrier that is suddenly generated as said fluid encounters and flows over said pressure recovery drop, said sub-atmospheric barrier comprising a low pressure area of fluid molecules having decreased kinetic energy that serve as a cushion between said higher kinetic energy fluid molecules in said fluid and the molecules at said surface to facilitate laminar flow and assist in the reduction of the separation potential of said fluid.

61. (new) The airfoil of claim 10, further comprising at least one fluid flow regulator featured and operable with said second surface.

62. (new) The airfoil of claim 10, wherein said fluid flow regulator is integrally formed with said first surface.

63. (new) The airfoil of claim 10, wherein said fluid flow regulator is removably attached to said first surface.

64. (new) The airfoil of claim 10, wherein said fluid flow regulator is positioned in an orientation selected from the group consisting of perpendicular to the direction of flow of said fluid, substantially perpendicular to the direction of flow of said fluid, on an angle with respect to said direction of flow of said fluid, parallel or substantially parallel to the direction of flow of said fluid, and any combination of these.

65. (new) The airfoil of claim 10, wherein said fluid flow regulator comprises a formation selected from the group consisting of linear, curved, spline, and any combination of these.

66. (new) The airfoil of claim 10, wherein said fluid flow regulator is positioned at or proximate an optimal pressure recovery point at which point there is an imbalanced or unequal pressure gradient forward and aft of said fluid, thus creating an adverse pressure about said airfoil, which adverse pressure gradient induces friction and pressure drag that ultimately increases the separation potential of said fluid.

67. (new) The airfoil of claim 10, wherein said fluid flow regulator comprises a dynamic fluid flow regulator that functions to vary the height of said at least one drop face.

68. (new) The airfoil of claim 67, wherein said dynamic fluid flow regulator inconsistently varies the height of said drop face along the length of said pressure recovery drop.

69. (new) The airfoil of claim 10, wherein said first surface is comprised of more than one fluid flow regulator.

70. (new) The airfoil of claim 10, wherein said pressure recovery drop comprises an orthogonal design.

71. (new) The airfoil of claim 10, wherein said first and second surfaces comprise a plurality of said fluid flow regulators.

72. (new) The airfoil of claim 10, wherein said airfoil is selected from the group consisting of a fan blade, a rotor, a turbine blade, a blower blade, an impeller, a propeller, and any other similar airfoils.

73. (new) The airfoil of claim 10, further comprising a sub-atmospheric barrier that is suddenly generated as said fluid encounters and flows over said pressure recovery drop, said sub-atmospheric barrier comprising a low pressure area of fluid molecules having decreased kinetic energy that serve as a cushion between said higher kinetic energy fluid molecules in said fluid and the molecules at said surface to facilitate laminar flow and assist in the reduction of the separation potential of said fluid.

74. (new) The hydrofoil of claim 15, further comprising at least one fluid flow regulator featured and operable with said second surface.

75. (new) The hydrofoil of claim 15, wherein said fluid flow regulator is integrally formed with said first surface.

76. (new) The hydrofoil of claim 15, wherein said first surface is comprised of more than one fluid flow regulator.

77. (new) The hydrofoil of claim 15, wherein said fluid flow regulator is positioned in an orientation selected from the group consisting of perpendicular to the direction of flow of said liquid, substantially perpendicular to the direction of flow of said liquid, on an angle with respect to said direction of flow of said liquid, parallel or substantially parallel to the direction of flow of said liquid, and any combination of these.

78. (new) The hydrofoil of claim 15, wherein said fluid flow regulator comprises a formation selected from the group consisting of linear, curved, spline, and any combination of these.

79. (new) The hydrofoil of claim 15, wherein said fluid flow regulator is positioned at or proximate an optimal pressure recovery point as the location(s) about said surface at which there is an imbalanced or unequal pressure gradient forward and aft of said fluid, thus creating an

adverse pressure about said hydrofoil, which adverse pressure gradient induces friction and pressure drag that ultimately increases the separation potential of said fluid.

80. (new) The hydrofoil of claim 15, wherein said fluid flow regulator comprises a dynamic fluid flow regulator that functions to vary the height of said at least one drop face.

81. (new) The hydrofoil of claim 80, wherein said dynamic fluid flow regulator inconsistently varies the height of said drop face along the length of said pressure recovery drop.

82. (new) The hydrofoil of claim 15, wherein said fluid flow regulator comprises means for effectuating vector positioning about said hydrofoil.

83. (new) The hydrofoil of claim 15, wherein said pressure recovery drop comprises an orthogonal design.

84. (new) The hydrofoil of claim 15, wherein said first and second surfaces comprise a plurality of said fluid flow regulators.

85. (new) The hydrofoil of claim 15, wherein said hydrofoil is selected from the group consisting of a fan blade, a rotor, a turbine blade, an impeller, a propeller, and any other similar hydrofoils.

86. (new) The hydrofoil of claim 15, further comprising a sub-atmospheric barrier that is suddenly generated as said liquid encounters and flows over said pressure recovery drop, said sub-atmospheric barrier comprising a low pressure area of liquid molecules having decreased kinetic energy that serve as a cushion between said higher kinetic energy liquid molecules in said liquid and the molecules at said surface to facilitate laminar flow and assist in the reduction of the separation potential of said liquid.